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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/217,401	12/21/98	ISHIDA	K 884.088US1

EXAMINER	
TRAN, T	
ART UNIT	**PAPER NUMBER**
2841	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/217,401	ISHIDA ET AL.	
	Examiner	Art Unit	
	Thanh Y. Tran	2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

1)☒ Responsive to communication(s) filed on *20 October 2000* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☒ Claim(s) *1* is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a)☐ All b)☐ Some * c)☐ None of the CERTIFIED copies of the priority documents have been:

1.☐ received.

2.☐ received in Application No. (Series Code / Serial Number) _____ .

3.☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

15)☒ Notice of References Cited (PTO-892)
16)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
18)☐ Interview Summary (PTO-413) Paper No(s). _____ .
19)☐ Notice of Informal Patent Application (PTO-152)
20)☐ Other:

DETAILED ACTION

This office action is in response to the amendment filed on 10/20/00.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-22 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The original specification fails to provide supports for new limitations regarding "solderless terminal", claims 1, 9, 11, 18, 20, 21 and 22.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 8, it is unclear how the push cover would be attached to the body? "A push cover" is not either shown in the figures of the invention.

Claim Objections

5. Claim 1 is objected to because of the following informalities: at line 2, a comma "," after word "second" should be removed? Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen et al. (U.S. 4,705,205).

Regarding to claims 1, 12, 18, 20, 21 and 22, Allen et al. discloses a mounting socket (see Figs. 7 & 10, and col. 16, lines 60-68), comprising (Figure 7) a socket body (32) having a first side and a second opposite side, the body (32) having a plurality of vias (36, 38, 39) extending therethrough; a plurality of conductive terminals (28) within the vias (36, 38, 39) wherein the terminals (28) comprise an elastically deformable member (see also Figs. 3(B) & 13, element 18 or 62; and col. 9, lines 45-65, also col. 12, lines 3-8).

Allen et al. further discloses a circuit interconnect (see Figs. 4, 7 & 10), comprising: a circuit board carrier (32) having a plurality of through holes (36, 38, 39) formed therein; and a plurality of conductive terminals (28) with lands (10) at each end, each terminal (28) in one of the through holes (36, 38, 39), wherein each conductive terminal (see element 18 in Fig. 3(B), or

element 28 in Fig. 7) comprises an elastically deformable member (see Figs. 3(B) & 13, element 18 or 62; and col. 9, lines 45-65; col. 12, lines 3-8; col. 16, lines 52-68; and col. 19, lines 10-26).

Allen et al. discloses a circuit package (see Figs. 7 & 10), comprising: a substrate (32) having a plurality of conductive terminals (28) therethrough; a first adhesive layer (see Fig. 10) affixed to a first side of the substrate (32); and a package (32) affixed to the first adhesive layer (as shown in Fig. 10).

Allen et al. discloses an integrated circuit (see Figs. 7 & 10), comprising: a substrate (32) having a plurality of vias (36, 38, 39) therein; and a plurality of elastically deformable terminals (28), each terminal positioned in a via (38).

Allen et al. discloses a circuit assembly (see Figs. 7 & 10), comprising: a substrate (34) having a built-in socket, the socket (32) having a plurality of vias (36, 38, 39) therein; a plurality of elastically deformable, conductive terminals (see element 28 in Fig. 7 or 18 in Fig. 3(B); also col. 9, lines 45-60), each terminal (18 or 28) within a via (36 or 38); a circuit board (34) having a plurality of mounting areas (12), the mounting areas (12) in a plurality of planes (22) which are substantially non-planar with each other; and wherein each terminal (28) is individually deformable to contact its respective mounting area (12) at the plane of the mounting area (see col. 16, lines 52 - col. 17, line 5 & lines 48-62);

a microprocessor (included on the chip carrier-32); a substrate (32) having a built-in socket having a plurality of vias (36, 38, 39) therein, and a plurality of conductive, elastically deformable terminals (see element 28 in Fig. 7 or 18 in Fig. 3(B)), at least a portion of the plurality of terminals (see Fig. 3 (B) &10, element 18 or 28) within a via (36 or 38); and a motherboard (see Fig. 10, "circuit board-34") having a plurality of mounting areas (12) thereon,

each elastically deformable terminal (see element 18 in Fig. 3(B), or 28 in Fig. 7), deformed to contact a mounting area (12) (see Fig. 7 & 13, col. 9, lines 45-60, and col. 19, lines 10-26).

The only difference between Allen et al. and the invention claim is that the claim comprises the solderless terminals in place of terminals (28) taught by Allen et al. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a solderless terminal into the system of Allen et al. because the solderless terminal would have been an obvious matter of design choice since the solderless terminal is a trade off cost, and it's also easy to remove from the circuit board. The Examiner take an official notice that it was well known in the art to have solderless terminals for the device of Allen et al. (MPEP 2144.03 In re Seifreid, 407 F. 2d 897 USPQ.).

Regarding to claim 2, Allen et al. discloses the mounting socket (see Figs. 7 & 13) wherein the elastically deformable member (see Fig. 3(B), element 18) comprises a spring (see Fig. 13, "spring-62"; and col. 19, lines 10-26).

Regarding to claim 3, Allen et al. discloses the mounting socket (see Figs. 3(B), 7 & 13) wherein the elastically deformable member (18 or 28) comprises a dish spring ("coil") (see Fig. 13, "spring-62" or col. 19, lines 10-26).

Regarding to claim 4, Allen et al. has suggested that "a spiral metal tape can be placed in the apertures of the retaining member" (see col. 20, lines 19-21). Even though Allen et al. does not explicitly disclose a conductive polymer injected within the vias. However, one of ordinary skill in the art could use a conductive polymer injected within the vias instead of using a spiral metal tape since a conductive polymer material may have a good electrical

connection with low temperature that benefits the circuit board. Thus a conductive polymer would have been an obvious matter of design choice.

Regarding to claim 5, Allen et al. discloses the mounting socket further (see Figs 7 & 10) comprising a first adhesive layer (as shown in Fig. 10) affixed to the first side of the body (see Fig. 10, element 32).

Regarding to claim 6, Allen et al. discloses the mounting socket (see Fig 10) comprising: a polymer tape ("retaining member") (see Fig. 10, elements 40; col. 14, lines 4-15) applied to the first adhesive layer (adhesive-46") (as shown in Fig. 10); and a second adhesive ("adhesive-46") (as shown in Fig. 10). Allen et al. does not explicitly disclose that a ground and power line circuit laid on the polymer tape ("retaining member"). However, it was commonly well known in the art to have a ground and power line circuit laid on the polymer tape ("retaining member") of the mounting socket ("chip carrier") so that the chip mounted on the socket ("carrier") can be active within the electronic system.

Regarding to claim 7, Allen et al. discloses the mounting socket (see Fig. 10) further comprising: a second adhesive layer (46) affixed to the second side of the body (see Fig. 10, element 34).

Regarding to claim 8, Allen et al. does not explicitly disclose a push cover attachable to the socket body first and second sides. However, according to the Applicant's specification at page 6, lines 7-11, the push cover attachable to the socket body first and second sides for encapsulating the assembly is well known in the art.

Regarding to claims 9 and 11, Allen et al. teaches a method of mounting a socket (see Figs. 7 & 10, element 32) to a board (34), comprising: applying an adhesive layer (46) to a board

side of the socket (see Fig. 10, "adhesive-46"; col. 17, lines 32-62, and col. 20, lines 50-60); leveling the adhesive layer (46) to make the adhesive layer substantially coplanar with contact terminals of the socket (see Fig. 10); and adhering the socket (32) to the board (34) (see Fig. 10, col. 17, lines 32-62, and col. 20, lines 50-60).

Allen et al. further teaches a method of mounting a package to a board (see Figs. 7, 8 & 10) using a socket (32) having contact terminals (10), the method comprising:

applying a first adhesive layer (as shown in Fig. 10) to a first, package side of the socket (32) (see Fig. 10, col. 17, lines 32-62, and col. 20, lines 50-60); leveling the first adhesive layer (as shown in Fig. 10) to make the adhesive layer substantially coplanar with the contact terminals (see Fig. 10); adhering the package to the first adhesive layer (see Fig. 7 & 10, col. 17, lines 32-62, and col. 20, lines 50-60);

applying a second adhesive layer (see Fig. 10, element 46) to a second, board side of the socket (34); leveling the second adhesive layer (46) to make the second adhesive layer (46) substantially coplanar with the contact terminals (see Fig. 10); and adhering the board (34) to the second adhesive layer (46) (see Figs. 7 & 10, col. 17, line 32 - col. 18, line 15, and col. 20, lines 50-60).

The only difference between Allen et al. and the invention method claim is that the method claim comprises the solderless terminals in place of terminals (28) taught by Allen et al. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a solderless terminal into the system of Allen et al. because the solderless terminal would have been an obvious matter of design choice since the solderless terminal is a trade off cost, and it's also easy to remove from the circuit board. The Examiner take an official notice

that it was well known in the art to have solderless terminals for the device of Allen et al. (MPEP 2144.03 In re Seifreid, 407 F. 2d 897 USPQ.).

Regarding to claim 10, Allen et al. teaches the method further comprising: applying a second adhesive layer (see Fig 10, element 46) to a package side of the socket (32) opposite the board side (34) of the socket; and adhering a package (32) to the second adhesive layer (46) (see Fig. 10, col. 17, lines 32- col. 18, lines 15, and col. 20, lines 50-60).

Regarding to claim 13, Allen et al. discloses the circuit interconnect (see Figs. 4, 7 & 10) further comprising: a first adhesive layer (as shown in Fig. 10) affixed to a first side of the circuit board carrier (32) (see Fig. 10, and col. 17, lines 32-62), the first layer having openings (36, 38, 39) (see Figs. 7, 9 & 10) to expose the lands (10).

Regarding to claim 14, Allen et al. discloses the circuit interconnect (see Figs. 4, 7 & 10) further comprising: a second adhesive layer (see Fig. 10, element 46) affixed to a second side of the circuit board carrier (34), the second layer (46) having openings ("holes-38") (see Fig. 7, "holes-38") to expose the lands (12), the second side opposite the first side (see Figs. 7 & 10, elements 32 & 34).

Regarding to claim 15, Allen et al. discloses the circuit interconnect (see Figs. 3(B), 4 & 8) wherein the conductive terminals (18 or 28) are conductive rubber (see col. 9, lines 45-60). [Note: terminal 18 in Fig. 3B is a conductive material (a conductive rubber is the same thing) which is elastic/plastic deformed by internal force F].

Regarding to claim 16, Allen et al. discloses the circuit interconnect (see Figs. 3(B) & 13) wherein the conductive terminals (see Fig. 3(B), element 18) comprise a spring (62) (see Fig. 13, and col. 19, lines 10-26).

Claim 17 is similar to claim 4, Allen et al. further discloses the circuit interconnect at Figs. 3(B), 7 & 13 wherein the conductive terminals (18 or 28) comprise: a compressible coil (62) (see Fig. 13, col. 19, lines 10-26). Thus claim 17 is rejected under a similar rationale.

Regarding to claim 19, Allen et al. discloses the circuit package (see Figs. 7 & 10) further comprising: a second adhesive layer (see Fig. 10, element 46) affixed to a second side of the substrate (34), the second side opposite the first side (32) (see Fig. 10, col. 17, lines 32-62).

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Barabi (U.S. 6,046,597) teaches Test socket for an IC device.
Howard et al. (U.S. 5,675,302) teaches Microwave compression interconnect using dielectric filled three-wire line with compressible conductors.
Switky (U.S. 5,413,489) teaches Integrated socket and IC package assembly.
Kazle (U.S. 5,936,847) teaches Low profile electronic circuit modules.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Y. Tran whose telephone number is (703) 305-4757. The examiner can normally be reached on Monday through Thursday and on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeff Gaffin, can be reached on (703) 308-3301. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3431.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

TYT

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